

We claim:

1. A process for producing dry powders of one or more  
5 carotenoids by
- a) dispersing one or more carotenoids in an aqueous  
molecular or colloidal solution of a mixture of lactose  
and a protective colloid and
- 10 b) converting the dispersion which has formed into a dry  
powder by removing the water and, where appropriate,  
additionally used solvents and drying, where appropriate  
in the presence of a coating material,
- 15 wherein at least one soybean protein is used as protective  
colloid in process step a).
2. A process as claimed in claim 1, wherein the dispersion step  
20 a) comprises the preparation of a suspension of one or more  
carotenoids in an aqueous molecular or colloidal solution of  
a mixture of lactose and at least one soybean protein.
3. A process as claimed in claim 2, wherein the suspension  
25 prepared in process step a) is ground before conversion into  
a dry powder.
4. A process as claimed in claim 1, wherein the dispersion in  
stage a) comprises the following steps:
- 30 a<sub>1</sub>) dissolving one or more carotenoids in a water-miscible  
organic solvent or in a mixture of water and a  
water-miscible organic solvent or
- 35 a<sub>2</sub>) dissolving one or more carotenoids in a water-immiscible  
organic solvent and
- 40 a<sub>3</sub>) mixing the solution obtained as in a<sub>1</sub>) or a<sub>2</sub>) with an  
aqueous molecular or colloidal solution of a mixture of  
lactose and at least one soybean protein, resulting in  
the hydrophobic phase of the carotenoid as nanodisperse  
phase.
5. A process as claimed in any of claims 1 to 4, wherein at  
45 least one partially degraded soybean protein with a degree of  
hydrolysis of from 0.1 to 20% is used as protective colloid.

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5. A process as claimed in any of claims 1 to 5, wherein the carotenoids used are oxygen-containing carotenoids.

7. A process as claimed in claim 6, wherein the oxygen-containing carotenoids are compounds selected from the group consisting of astaxanthin, canthaxanthin, lutein, zeaxanthin, citranaxanthin and ethyl  $\beta$ -apo-8'-carotenoate.

8. A process as claimed in claim 7, wherein

a) astaxanthin and/or canthaxanthin is dissolved in a water-miscible organic solvent or a mixture of water and a water-miscible organic solvent at temperatures above 30°C,

b) the resulting solution is mixed with an aqueous molecular or colloidal solution of a mixture of lactose and a partially degraded soybean protein with a degree of hydrolysis of from 0.1 to 20%, and

c) the dispersion which has formed is converted into a dry powder.

9. A process as claimed in claim 8, wherein astaxanthin is used as carotenoid.

10. A carotenoid-containing dry powder obtainable by a process as defined in any of claims 1 to 9.

11. A dry powder as claimed in claim 10 with a carotenoid content of from 0.1 to 30% by weight.

12. A dry powder as claimed in either of claims 10 or 11, comprising oxygen-containing carotenoids selected from the group consisting of astaxanthin, canthaxanthin, lutein, zeaxanthin, citranaxanthin and ethyl  $\beta$ -apo-8'-carotenoate.

13. A dry powder as claimed in claim 12, comprising 5 to 20% by weight of astaxanthin.

14. A dry powder as claimed in claim 12, comprising 5 to 20% by weight of canthaxanthin.

15. The use of the carotenoid-containing dry powders as defined in any of claims 10 to 14 as addition to human foods, pharmaceuticals and/or animal feeds.

A process for producing dry powders of one or more carotenoids

Abstract

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The invention relates to a process for producing dry powders of one or more carotenoids by

- 10 a) dispersing one or more carotenoids in an aqueous molecular or colloidal solution of a mixture of lactose and a protective colloid and
- b) converting the dispersion which has formed into a dry powder by removing the water and, where appropriate, additionally
- 15 used solvents and drying, where appropriate in the presence of a coating material,

wherein at least one soybean protein is used as protective colloid in process step a).

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